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CLOSURE

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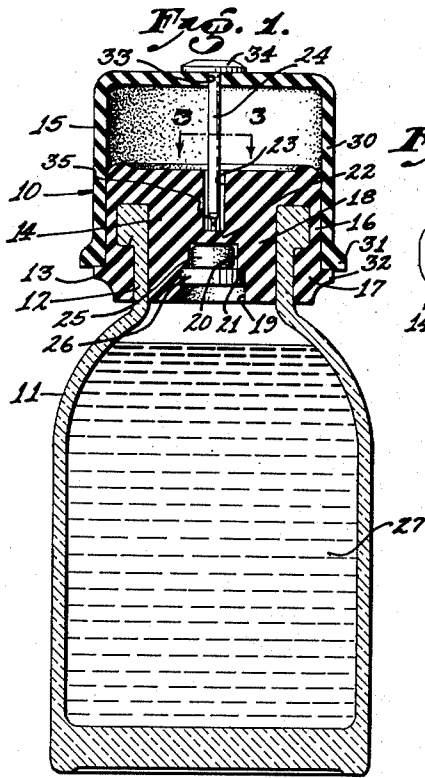
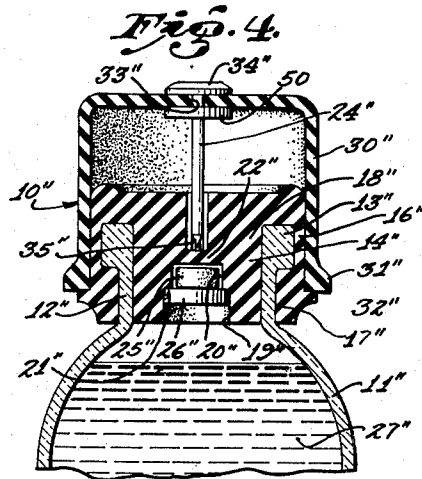
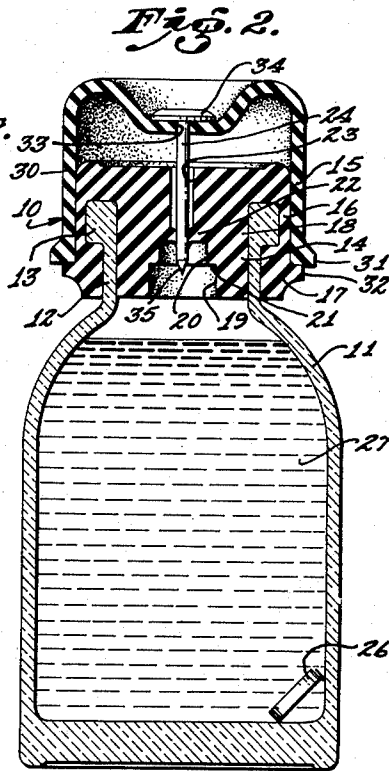
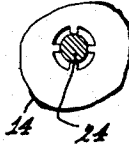


Fig. 3.



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CLOSURE

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3 Claims. (Cl. 128—272)

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This invention relates to a closure.

The general object of the invention is to provide an improved closure which may be used on bottles containing drugs or other material to be injected or otherwise dispensed.

A more specific object of the invention is to provide a container closure which includes a resilient, flexible portion which may be manipulated to cause a fresh solution to be prepared in the container.

Another object of the invention is to provide a container closure including a portion secured on the container and a second supplemental portion which is flexible and which may be depressed to cause a drug in the first portion to be discharged into a vehicle in the container to prepare a fresh solution.

Another object of the invention is to provide a novel, flexible container closure.

Other objects and advantages of my invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is a central, sectional view showing a container with my improved closure thereon;

Fig. 2 is a view similar to Fig. 1, with the outer closure depressed;

Fig. 3 is a section taken on line 3—3, Fig. 1, and

Fig. 4 is a view similar to Fig. 1, showing a modification.

Referring to the drawing by reference characters, I have shown my invention as embodied in a container closure which is indicated generally at 10. As shown, the closure is mounted on a bottle 11 which has a reduced neck 12 with an external flange 13 at the upper end thereof. The closure consists of a main body portion 14 and an auxiliary closure 15, both made of flexible rubber or similar material. The body portion 14 has a skirt portion 16 with an internal flange 17 at the lower end of the skirt. The flange 17 engages beneath the collar 13 to hold the closure member in place.

The body of the closure includes an inwardly directed sleeve 18 which fits within the container neck and has an axial recess 19 and a reduced axial recess 20 which together form a shoulder 21. Above the shoulder I provide a pierceable diaphragm 22 and above the diaphragm I provide an axial hole 23 which opens outwardly to receive a piercing member 24, to be later described.

Within the reduced recess 20 I arrange a medicinal pellet 25 and in the recess 19 and engaging the shoulder 21 I arrange a closure disc 26 which serves to confine the medicinal pellet in place

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and to prevent the vehicle 27 in the container from dissolving the pellet.

The auxiliary closure 15 includes a skirt portion 30 which engages the periphery of the main closure and has a peripheral flange 31 by means of which the auxiliary closure may be readily removed if desired. The lower end of the skirt of the auxiliary closure rests upon an external flange 32 on the main closure. The auxiliary closure is provided with a hole 33, through which the piercing member 24 extends. The piercing member is provided with a head 34, shown as disposed upon the outer surface of the auxiliary closure.

With the parts in the position shown in Fig. 1, to prepare a solution the operator depresses the auxiliary closure and the head 34 of the piercing member, causing the pointed end 35 of the latter to pierce the diaphragm 22 and thus displace the disc 26, causing the pellet 25 to enter the solvent 27 and thus prepare a fresh solution. The piercing member is then pulled out of the diaphragm 22 and since the parts are made of rubber, the hole made by the piercing member will be self-sealing.

To use some of the freshly prepared solution, the operator may remove the auxiliary closure 15 and insert a hypodermic needle through the diaphragm 22 and thus extract some of the contents of the container, or, if desired, the operator may remove the piercing member 24 from the auxiliary closure and may then insert the hypodermic needle, first through the hole 33 and then through the diaphragm 22, to extract the contents.

In Fig. 4 I show a modification in which parts similar to those previously described are designated by double primed reference numerals. In this further modification the parts are like those shown in Fig. 1 except that the piercing member 24' has an outer head 34' and in addition has an inner head or collar 50 which engages the lower face of the auxiliary closure. The collar 50 may tightly engage the piercing member 24' or it may be made an integral part thereof and may be secured in place by stretching the material of the auxiliary closure.

The operation of the modification shown in Fig. 4 is the same as that described above except that the auxiliary closure and piercing member are constrained to move together, thus assuring that the piercing member will not be displaced.

In the present application, Ser. No. 791,429, filed December 12, 1947, the claims are directed to a main and an auxiliary closure, with a flanged piercing member extending through a hole in

the auxiliary closure and movable with the auxiliary closure to displace a sealing disc carried by the main closure.

In applicant's copending application Ser. No. 791,428, filed December 12, 1947, the claims are directed to a tubular disc displacing member wherein the tube is provided with a flange which is arranged within the auxiliary closure.

In copending application Ser. No. 4,089, filed January 24, 1948, the claim is directed to the main and outer closures, wherein the main closure includes a cupped diaphragm portion and the outer closure includes a stem which engages the cupped portion to cause release of a sealing disc.

In copending application Ser. No. 4,193, filed January 24, 1948, the claim is directed to the closure which includes a corrugated diaphragm engageable by a releasing stem carried by an auxiliary closure.

From the foregoing description it will be apparent that I have invented a novel closure which can be economically manufactured and assembled and which is highly efficient for its intended use.

Having thus described my invention, I claim:

1. A closure comprising a main body portion and an auxiliary closure portion, said main body portion having a skirt adapted to engage the outer surface of the neck of a bottle, said skirt having an internal flange adapted to engage beneath a bottle neck flange, said skirt also having an external flange, said body portion having a sleeve portion adapted to fit within a bottle neck, said sleeve portion having an axial recess therein and having a second axial recess smaller than the first recess, a sealing disc in said first recess, a medicinal tablet in said second recess, a diaphragm closing the inner end of the inner recess, said body portion having an axial hole therein extending outwardly from said diaphragm, said auxiliary closure including a flexible body having a skirt thereon, said skirt engaging the periphery of said body portion and engaging the flange on said body portion, said auxiliary closure skirt having an external flange thereon, and a piercing member having a sharpened lower end disposed in said hole, said auxiliary closure having an axial hole, said piercing member extending through said hole, said piercing member having a flange thereon, said flange being disposed on the outer surface of said auxiliary closure member and being movable with said outer auxiliary closure member.

2. A closure comprising a main body portion and an auxiliary closure portion, means to hold the closure on a container, said body portion

having a sleeve portion adapted to fit within a bottle neck, said sleeve portion having an axial recess therein and having a second axial recess smaller than the first recess, a sealing disc in said first recess, a medicinal tablet in said second recess, a diaphragm closing the inner end of the inner recess, said body portion having an axial hole therein extending outwardly from said diaphragm, said auxiliary closure including a flexible body having a skirt thereon, said skirt engaging the periphery of said body portion, and a piercing member having a sharpened lower end disposed in said hole, said auxiliary closure having an axial hole, said piercing member extending through said hole, said piercing member having a flange thereon, said flange being disposed on the outer surface of said auxiliary closure member and being movable with said outer auxiliary closure member.

3. A closure comprising a main body portion and an auxiliary closure portion, said main body portion having a skirt adapted to engage the outer surface of the neck of a bottle, said body portion having a sleeve portion adapted to fit within a bottle neck, said sleeve portion having an axial recess therein and having a second axial recess smaller than the first recess, a sealing disc in said first recess, a medicinal tablet in said second recess, a diaphragm closing the inner end of the inner recess, said body portion having an axial hole therein extending outwardly from said diaphragm, said auxiliary closure including a flexible body having a skirt thereon, said skirt engaging the periphery of said body portion, and a piercing member having a sharpened lower end disposed in said hole, said auxiliary closure having an axial hole, said piercing member extending through said hole, said piercing member having spaced flanges thereon, said flanges being disposed on the inner and outer surfaces of said auxiliary closure member and being movable with said outer auxiliary closure member.

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